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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/537,329  | 12/02/2005  | Takaomi Nakayama     | 4626.P0002US        | 8404             |
| 23474   | 7590        | 03/07/2008           | EXAMINER            |                  |
| FLYNN THIEL BOUTELL & TANIS, P.C.<br>2026 RAMBLING ROAD<br>KALAMAZOO, MI 49008-1631 |             |                      | ZHENG, LOIS L       |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 1793                |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/537,329             | NAKAYAMA ET AL.     |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | LOIS ZHENG             | 1793                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 December 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-17 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/1/05, 9/2/05, 9/21/07, 12/14/07</u> .                       | 6) <input type="checkbox"/> Other: _____ .                        |

## DETAILED ACTION

### ***Status of Claims***

1. Claims 3-7, 10, 14-17 are amended in view of preliminary amendment filed 1 June 2005. Therefore, claims 1-17 are currently under examination.

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-7, 10 and 13-15 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10/480,841(i.e. US 2004/0244874 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-18 of copending Application No. 10/480,841 teaches a treating solution that comprises substantially the same amount of zirconium or titanium

compounds, substantially the same amount of free fluorine ions and the same pH. claims 1-18 of copending Application No. 10/480,841 also teaches the same presence of nitric acid, the same at least one oxygen acid, the same polymer and the same surfactant. Claims 10 of copending Application No. 10/480,841 further teaches that the treatment solution is applied by electrolysis and teaches the same coating weight on iron and zinc surfaces.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 8-9, 11-12 and 16-17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10/480,841(i.e. US 2004/0244874 A1) in view of Bittner et al. WO 2002/024344, whose corresponding US Patent Application Publication is US 2003/0185990 A1(Bittner).

The teachings of the claims of copending Application No. 10/480,841 are discussed above. However, these claims do not explicitly teach the subsequent treatment with a solution comprising polymer compounds or Co, Ni, Sn, Cu and Ti/Zr as claimed and the aluminum and magnesium metal material as claimed.

Bittner teaches a metal surface coating solution comprising corrosion inhibitors such as Zr /Cr phosphate or carbonates(paragraph 0034), complex and free fluorides (paragraph 0037), polymers(paragraph 0028) and hydrogen peroxide(paragraph 0117). Bittner further teaches that the coating treatment can be followed by another treatment

with a coating bath that comprises substantially the same components such as corrosion inhibitors, complex and free fluorides and polymers.

Regarding claims 8-9 and 11-12, one of ordinary skill in the art would have found it obvious to have found it obvious to repeated the coating treatment of copending Application No. 10/480,841 as suggested by Bittner in order to achieve desired coating thickness and corrosion protection as taught by Bittner.

Regarding claims 16-17, since Bittner teaches a substantially similar coating composition as the coating composition of copending Application No. 10/480,841, and Bittner further teaches that its coating solution can be applied to metal surfaces such as aluminum, iron, magnesium, zinc and their alloys(paragraph 0073), one of ordinary skill in the art would have found it obvious that the coating solution of copending Application No. 10/480,841 can be applied to magnesium metal surface with expected success. In addition, even though copending Application No. 10/480,841 in view of Bittner do not explicitly teach the claimed amount of coating weight, one of ordinary skill in the art would have found it obvious to have varied the amount of surface treatment time during the process of copending Application No. 10/480,841 in view of Bittner in order to produce desired coating thickness or coating weight to achieve the desired corrosion protection.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 3, 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Rossmaier US 5,935,348(Rossmaier).

Rossmaier teaches an aqueous aluminum surface treatment composition comprising complex fluorides such as hexafluorotitanate and hexafluorozirconates, simple fluorides such as hydrofluoric acid, nitric acid and polymers, wherein the basic recipe for the coating bath is listed below(col. 8 lines 34-42):

Basic recipe:  
35 400 mg/l of tris(2-hydroxyethyl)-tallow-smonium acetate  
145 mg/l of hexafluorozirconic acid  
66 mg/l of phosphoric acid  
266 mg/l of nitric acid  
40 32 mg/l of hydrofluoric acid  
200 mg/l of defoamer (silyl-polyalkoxy ester, Fosmaster®  
C14, Henkel KGaA, Düsseldorf)

Rossmaier further teaches that the pH of the coating solution is 2.3-3.3(col. 2 lines 61-64).

Regarding claims 1, 3, 5 and 7, the Rossmaier teaches the same coating solution and the same coating process.

7. Claims 1-7, 10, 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakayama et al. US 2004/0244874 A1(Nakayama).

Nakayama teaches a metal surface treatment solution, a treatment process and coated metal products that are substantially the same as instantly claimed treatment solution, process and coating metal materials(claims 1-18). Example 7 of Nakayama further demonstrates a treatment solution that falls within the claimed component concentration and pH ranges.

Therefore, Nakayama anticipates instant claims 1-7, 10, 14-15.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al. US 2004/0244874 A1(Nakayama).

The teachings of Nakayama are discussed in paragraph 6 above. Nakayama further teaches that the treatment solution can be applied to iron, zinc, aluminum and magnesium alloys(paragraph [0029]).

Regarding claims 16-17, even though Nakayama does not explicitly teach the claimed amount of coating weight on aluminum and magnesium metal materials, one of ordinary skill in the art would have found it obvious to have varied the amount of surface treatment time during the process of Nakayama in order to produce desired coating thickness or coating weight to achieve the desired corrosion protection on aluminum and magnesium metal materials.

10. Claims 1-5, 7, 10 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kogure US 4,130,431(Kogure).

Kogure teaches a metal surface treatment liquid comprising oxytitanic or peroxytitanic ions in an amount of 0.0025-2.5 mole per 1000 g of surface treatment liquid(col. 3 lines 36-470) and acids such as hydrofluoric and/or nitric acid(col. 2 lines 47-51), wherein the pH of the treatment liquid is less than 6(col. 3 lines 28-35). Kogure further provides a list of suitable titanium compounds such as calcium and magnesium titanates, titanium di, tri and/or tetrachlorides and titanium tri or tetrafluorides(col. 2 lines 34-46).

Regarding claim 1, the languages “for surface treatment of metal” and “to treat independently teach metal material or simultaneously two or more metal materials selected from the group consisting of ferriferous material, zinciferous material, aluminiferous material and magnesiferous material” are merely stating the intended use for the instantly claimed solution, therefore, do not render the instant claim patentable.

In addition, the claimed pH and titanium compound concentration overlaps the claimed pH and titanium compound concentration. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed pH and titanium compound concentration ranges from the disclosed ranges of Kogure would have been obvious to one skilled in the art since Kogure teaches the same utilities in its' disclosed pH and titanium concentration ranges.

Furthermore, even though Kogure does not explicitly teach the amount hydrofluoric acid(i.e. containing free fluorine ions) in the treatment solution, one of

ordinary skill in the art would have found it obvious to have adjusted the amount of hydrofluoric acid in the treatment solution of Kogure via routine optimization in order to maintain the desired pH in the treatment solution.

Regarding claim 2, since Kogure teaches that suitable titanium compounds are calcium and magnesium titanates, the claimed calcium and magnesium ions are inherently present in the treatment solution of Kogure. Based on the disclosed amount of titanium compound by Kogure, the examiner concludes that the calcium and magnesium concentrations in the treatment solution of Kogure would have overlap the claimed calcium and magnesium concentrations. Therefore, a *prima facie* case of obviousness exists. See MPEP 2144.05. The selection of claimed calcium and magnesium concentration ranges from the disclosed ranges of Kogure would have been obvious to one skilled in the art since Kogure teaches the same utilities in its' disclosed calcium and magnesium concentration ranges.

Regarding claim 3, Kogure's teaching of using inorganic acids such as nitric acid meets the limitation of nitrate ions in the treatment solution. In addition, even though Kogure does not explicitly teach the amount nitric acid in the treatment solution, one of ordinary skill in the art would have found it obvious to have adjusted the amount of nitric acid in the treatment solution of Kogure via routine optimization in order to maintain the desired pH in the treatment solution.

Regarding claim 4, Kogure further teaches that hydrogen peroxide is preferably added to the surface treatment liquid(col. 2 lines 52-60).

Regarding claim 5, Kogure further teaches the presence of polymer in the treatment solution(col. 3 line 67 - col. 4 line 5).

Regarding claim 7, Kogure further teaches that its treatment solution can be used to form a rust preventive coating on metal surfaces such as steel, galvanized steel, aluminum, etc.(col. 4 lines 22-31). Therefore, one of ordinary skill in the art would have found it obvious to have applied the treatment solution of Kogure to claimed ferriferous, zinciferous, aluminiferous with expected success.

Regarding claim 10, Kogure further teaches that the treatment solution can be applied by electrodeposition(col. 4 lines 9-14), which implies using the metal substrate as cathode as claimed.

Regarding claims 14-16, since the treatment solution of Kogure is suitable for steel, galvanized steel and aluminum surfaces, the coated steel, galvanized steel and aluminum material reads on the claimed metal materials. In addition, even though Kogure does not explicitly teach the claimed amount of coating weight, one of ordinary skill in the art would have found it obvious to have varied the amount of surface treatment time during the process of Kogure in order to produce desired coating thickness or coating weight to achieve the desired corrosion protection.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kogure in view of Frelin et al. US 4,313,769(Frelin).

The teachings of Kogure are discussed in paragraph 9 above. However, Kogure does not explicitly teach the claimed surfactant.

Frelin teaches a coating solution for metal surfaces, wherein the coating solution comprising Zr/Ti compounds(col. 3 line 38 – col. 4 line 22), free fluoride ions(col. 5 lines 9-39), polymer(col. 5 line 60 – col. 6 line 16). Frelin further teaches adding nonionic surfactants to the coating solution(col. 5 lines 40-58).

Regarding claim 6, it would have been obvious to one of ordinary skill in the art to have incorporated nonionic surfactants as taught by Frelin into the coating solution of Kogure since Frelin teaches that using combination of surfactant, Zr/Ti compound and fluorine ions produces coatings with excellent corrosion resistance and adhesion(col. 2 lines 26-56).

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kogure in view of Frelin, and further in view of Bartik-Himmler et al. US 6,627,006 B1(Bartik-Himmler) .

The teachings of Kogure in view of Frelin are discussed in paragraph 10 above. However, Kogure in view of Frelin do not explicitly teach that the metal surface is not cleaned or degreased prior to the coating treatment.

Bartik-Himmler et al. US 6,627,006 B1(Bartik-Himmler) teaches a metal surface coating solution comprising complex and free fluorides(col. 4 lines 41-54), Ca/Mg ions(col. 4 lines 26-27), nitrate ions(col. 5 lines 10-18), and accelerators such as hydrogen peroxide and nitrite ions(col. 5 lines 5-6). Bartik-Himmler further teaches that the metal surface can be treated with a cleaning bath containing anionic and/or nonionic surfactants(col. 6 lines 40-42).

Regarding claim 13, in light of the teachings from Bartik-Himmler, one of ordinary skill in the art would have found it obvious to have eliminated the cleaning/degreasing step prior to the coating treatment step in the process of Kogure in view of Frelin since the coating solution of Kogure in view of Frelin already contain nonionic surfactant that would have been present in the cleaning pretreatment solution as taught by Bartik-Himmler.

13. Claims 8-9, 11-12 and 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kogure in view of Bittner et al. WO 2002/024344, whose corresponding US Patent Application Publication is US 2003/0185990 A1(Bittner).

The teachings of Kogure are discussed in paragraph 9 above. However, Kogure does not explicitly teach the subsequent treatment with a solution comprising polymer compounds or Co, Ni, Sn, Cu and Ti/Zr as claimed.

Bittner teaches a metal surface coating solution comprising corrosion inhibitors such as Zr /Cr phosphate or carbonates(paragraph 0034), complex and free fluorides (paragraph 0037), polymers(paragraph 0028) and hydrogen peroxide(paragraph 0117). Bittner further teaches that the coating treatment can be followed by another treatment with a coating bath that comprises substantially the same components such as corrosion inhibitors, complex and free fluorides and polymers.

Regarding claims 8-9 and 11-12, one of ordinary skill in the art would have found it obvious to have found it obvious to repeated the coating treatment of Kogure as suggested by Bittner in order to achieve desired coating thickness and corrosion protection as taught by Bittner.

Regarding claim 17, since Bittner teaches a substantially similar coating composition as the coating composition of Kogure, and Bittner further teaches that its coating solution can be applied to metal surfaces such as aluminum, iron, magnesium, zinc and their alloys(paragraph 0073), one of ordinary skill in the art would have found it obvious that the coating solution of Kogure can be applied to magnesium metal surface with expected success. In addition, even though Kogure in view of Bittner do not explicitly teach the claimed amount of coating weight, one of ordinary skill in the art would have found it obvious to have varied the amount of surface treatment time during the process of Kogure in view of Bittner in order to produce desired coating thickness or coating weight to achieve the desired corrosion protection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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LLZ